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To the development of the mechanism of interaction of galactic comets with the terrestrial planets

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Abstract

© Published under licence by IOP Publishing Ltd.We formulate an approach to the study of the physics of interaction of galactic comets with the terrestrial planets and the Moon, based on idealized hydrodynamic models of "elastic" and "inelastic" impact proposed by M A Lavrentiev. According to these models, a large crater arises on the solid surface of planet in case of "elastic" collision, whereas the narrowly focused shock wave is formed in result of "inelastic" impact. This shock wave penetrates deep into the lithosphere rocks causing their heating. Using the factual data for Earth, Mars and Moon, we came to the conclusion that the interaction of galactic comets with planets goes on with the participation of both the physical processes at once. At that, with a decrease of power of gaseous envelope of planet, the action of "inelastic" collision mechanism is reduced, "elastic" - amplified.

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